

was then poured on and allowed to act under pressure for several hours. It was then filtered off and evaporated to dryness with nitric acid, so as to decompose any ammonia salts. The residue was then treated in three different ways, and the spectrum photographed in each case.

1. With excess of hydrochloric acid. 2. Water was added to the iron and boiled with it. 3. Acetic acid was added and boiled with the iron, some of which was dissolved, and the solution was therefore nearly neutralised with ammonia and boiled. Photographs were then taken of the spectra of the iron thus precipitated and the filtrate from it. The following is a summary of the results obtained :—

Ammonia.	Water.	Acetic Acid.
Nickel	Calcium	Antimony
Cadmium	Manganese	Lead
Calcium	Copper	Aluminium
Manganese		Copper
Copper		Calcium
		Manganese

"The above experiments were made with 7° coils and dense prisms of 60° and 75°, with object-glasses of quartz. By using an electro-dynamic machine a greater dispersion might be used, and the length of the image increased. We think that it would then be found that the bodies which we have detected by indirect means would appear in the spectrum of the original metal."

In addition to the above Mr. Wrightson read a second paper "On some physical changes occurring in Iron and Steel at High Temperatures," which was a continuation of a paper read by him at the Liverpool meeting last year. Mr. Ackerman, of Stockholm, contributed a very lengthy memoir "On Hardening Iron and Steel; its Causes and Effects." There were also five other papers on subjects of importance, chiefly to those technically interested in the manufacture of iron and steel.

In conclusion the Institute must be congratulated not only on the importance and number of the papers produced, but also on the fact that it has succeeded in obtaining contributions from three foreign countries, viz., Germany, Russia, and Norway, a circumstance which will no doubt give to the proceedings of the association an international importance.

NOTES

MR. W. CHANDLER ROBERTS, F.R.S., Chemist of the Mint, has been appointed to the Lectureship of Metallurgy in the Royal School of Mines, rendered vacant by the resignation of Dr. Percy, F.R.S. Mr. Roberts will continue to hold his appointment at the Mint. Mr. Richard Smith, hitherto Assistant Metallurgist, has been appointed Instructor in Assaying.

THE following foreign men of science have recently (May 6) been elected Foreign Members of the Linnean Society :—M. C. J. de Maximowicz, Director of the Imperial Museum and Herbarium, St. Petersburg, author of many important memoirs on systematic botany; Dr. Edward Strasburger, Professor of Botany in the University of Jena, well known for his morphological and physiological researches among various groups of plants; and Prof. Elias Metschnikoff, Director of the Embryological and Zoological Institute, Odessa, whose investigations on the structure and development of the lower marine invertebrata are highly valued.

THE Municipality of Rome has just erected on the promenade of the Pincio a statue in honour of Father Secchi. The statue represents the great astronomer in the attire of a member of the Company of Jesus.

UNDER their present government the French are multiplying the statues erected to their men of science by means of public

subscription. Not less than three new schemes are on foot for that purpose in several parts of the country. A committee has been established at Montpellier for Auguste Comte; another at Blois, in honour of Denis Papin, a rival of the Marquis of Worcester, who, according to the French notion, invented the steam-engine; and a third at Bar-le Duc, on behalf of François Cugnot, an engineer born in the vicinity of that city, who in 1770 constructed a road-locomotive. This rudimentary steam-engine, which is exhibited just now at the Conservatoire des Arts et Métiers, was tried officially but unsuccessfully in the arsenal of Paris more than a century ago.

DR. NILS JOHANN ANDERSSON, the celebrated Swedish botanist and traveller, as the *Gardener's Chronicle* learns from the *Botanisches Centralblatt*, died after long suffering on March 27 at Stockholm. Andersson was born on February 20, 1821, studied at Upsal, graduated as Doctor of Philosophy in 1845, and resided at the University as Assistant Professor of Botany. Afterwards he took part in the expedition of the frigate *Eugénie* round the world, 1851-1853, the result of which he published in several treatises which were translated into various foreign languages. In 1855 he became Demonstrator of Botany at Lund, and in the following year was appointed permanent Professor of Botany, Director of the Bergianska 'schen Garten and Superintendent of the botanical division of the Royal Museum. There he worked with great success till the beginning of 1879. From here Andersson undertook numerous journeys in the cause of science to Lapland, Norway, Germany, France, England, &c. He also acquired scientific renown through his various treatises, books of travel, and text-books.

PROF. SILVESTRI, of Catania, reports as follows concerning the renewed activity of Etna, to which we referred last week :— "The eruption issues from the western side of the mountain, precisely the part which separates the central crater from the eruptive craters of last year. The situation indicated represents the principal part of the ravine which was then formed and remained opened, and which, beginning at the recent eruptive craters, finally crosses the great crater. This ravine, in which are many crater-caverns which opened last May but remained inactive, is now the scene of the present activity, limited as yet to a simple eruption of steam and ashes, such as has frequently taken place during the past months at the summit of the mountain. To-day (April 28), while the sky is cloudless, one sees from Catania the summit of Etna enveloped in clouds which, scattered by a rather strong north-east wind, have no resemblance to eruptive clouds, though they are formed by the steam issuing from the mountain. The eruption of mud at Paterno to the south still continues, and on certain days in some of the craters increases in energy, ejecting as abundant mud as during the first days after the appearance of the phenomena."

ON Tuesday evening a paper on the botanical enterprise of the empire was read to the Colonial Institute in St. James's Hall by Mr. Thiselton Dyer, assistant director of Kew Gardens. The lecturer gave a history of botanical gardens, which date from the middle of the sixteenth century, when Alfonso d'Este, Duke of Ferrara, the patron of Tasso, set the fashion of making collections of foreign plants and flowers. The earliest public botanic garden was founded by Cosmo de' Medici in 1544 for the University of Pisa. The following year one was founded at Padua. In France the earliest botanic garden was founded at Montpellier towards the end of the sixteenth century, and in Germany that of Giessen was established in 1614, and in the Low Countries that of Leyden dated from 1577. In England the Royal Garden at Hampton Court was founded by Queen Elizabeth, and supported by Charles II. and George III. Those which followed and still remain were Oxford, founded in 1632; Chelsea, in 1673; and Edinburgh, in 1680. The origin of Kew as a

scientific institution was entirely due to our Hanoverian princes. During the reigns of George IV. and William IV. Kew was much neglected; but since that date, owing to the efforts of Lindley and Sir W. Hooker, that state of things had been remedied. The lecturer gave a long and elaborate account of the methods pursued and the objects aimed at in the gardens at Kew. There was hardly any country of which a native would not recognise some types of vegetation with which he had been familiar. Plant distribution to all parts of the world was extensively carried out from the gardens, especially that of cinchona, caoutchouc, and Liberian coffee. The herbarium, which was the largest and best organised in the world, and the library, were important features in the gardens, and served to promote a scientific method of nomenclature, identification, and classification. In 1863 the Duke of Newcastle, then Colonial Secretary, instructed Sir W. Hooker to publish a series of colonial floras; and twenty-two volumes had been issued and others were in progress. The floras of Australia and British India were especially valuable. In the former there were 293 species of acacia and 135 of the eucalyptus. Floras had also been published of Hongkong, Mauritius, and the Seychelles, the British West Indies, and New Zealand. The example of Kew in the matter of museums and economic botany had been followed by Hamburg, Berlin, Ghent, Paris, Boston, and our own colonies. The whole vegetable collections of the India Museum had been recently transferred to Kew. One of the most striking features of the gardens was the enormous correspondence with the botanic establishments of the colonies. Mr. Dyer then indicated the principles which should guide the establishment of a colonial botanic garden; one of the chief of these was that it should be attractive and conveniently situated. It was also most important that it should be under competent management, and he was glad to see that the emoluments of directors had in some of our colonies been fixed on a liberal scale. Mr. Dyer concluded by reviewing the progress made by our colonies in botanical research.

IN the first four months of 1880 the receipts for telegrams in France have been increased by 1,500,000 francs, but the postal department lost one-sixth of that amount. This result shows that owing to the low rate of telegrams in France ($\frac{1}{2}$ d. per word) and the increased postage ($1\frac{1}{2}$ d. per letter), telegraphy is gradually taking the place of ordinary letters.

MR. S. H. WINTLE contributes to the *Launceston Examiner* (Tasmania) of Feb. 20 some curious facts with regard to a "black snake" which he succeeded in capturing by pinning to the ground with a forked stick. In his haste Mr. Wintle pinned the snake to the ground by the middle of the body; what then occurred we give in his own words without comment:—"No sooner had I done so—for now his rage was at its highest pitch—than in an instant he buried his fangs in himself, making the spot wet either with viscid slime or the deadly poison. Now comes that which is of most interest from a scientific point of view. He had hardly unburied his fangs when his coils round the stick suddenly relaxed. A perceptible quiver ran through his body, and in much less time than it takes to write it he lay extended and almost motionless, with his mouth opening and shutting as if he were gasping, but no forked tongue thrust out. In less than three minutes from the time he bit himself he was perfectly dead. Here, then, was a striking example of the potency of the fang-poison of the snake upon itself." An hour after the death of the snake Mr. Wintle tried the effect of the poison in the fangs on a mouse, which died in five minutes, and on a lizard, which died in fourteen minutes. On a *post-mortem* examination of the snake the body was found almost bloodless, "as though the action of the poison had destroyed the colouring-matter of the blood."

MR. F. LEWIS, jun., of Ballangoda, Ceylon, sends us a snake

story in connection with the correspondence on intellect in brutes:—"A short time ago," he says, "I caught a common 'green snake,' and, anxious to try its power of intellect, I brought my finger close to its nose, and seeing that it seemed disposed to bite, I introduced the end of a match close to its mouth. This it did not seem to care about touching, so thinking perhaps that if I moved it about before the animal's eyes it might attract its attention, I did so, but without success. I then took the animal by the neck, and brought *its own tail* before its nose. This it grasped at immediately, and with considerable ardour, but still refused the match! Why should the snake prefer its own tail upon which to exercise its temper? I would suggest that if a few experiments were tried on animal instinct or intelligence some remarkable facts might be elicited, and probably some light thrown upon a subject at present so intricate and complex."

ON Tuesday next (May 18) at the Royal Institution Mr. J. Fiske will give the first of a course of three lectures on American Political Ideas viewed from the Standpoint of Universal History; on Thursday (May 20) Mr. T. W. Rhys Davids will give the first of a course of three lectures on the Sacred Books of the Early Buddhists. The following are the arrangements for the remaining Friday evenings: May 21, Mr. W. Spottiswoode, on Electricity *in transitu*; May 28, Mr. Francis Hueffer, on Musical Criticism; and June 4, Mr. H. H. Statham, an Analysis of Ornament.

M. W. DE FONVIELLE has discovered a very simple process for putting in rotation his newly invented electro-magnetic gyroscope. It is sufficient to connect one end of the frame with each part of the self-acting interrupter. The only difficulty is to place the magnets at a proper distance and not to use a stronger voltaic current than required. For this operation to succeed, it is desirable to understand well the manœuvres of an instrument constructed on purpose. Some of the so-called electro-medical bobbins succeed remarkably well, either with the primary, the secondary, or a combination of the two working in tension.

A PART of the St. Gothard Tunnel, 6,300 metres from the south entrance, has fallen in, killing three workmen and injuring three others.

FIVE walled tombs, each containing a skeleton, have been discovered at Chamblandes, Canton Vaud. From the absence of metal ornaments and other indications, they are supposed to belong to an age prior to that of bronze.

ON May 9 a large number of officials and others assembled at Noailles to celebrate the completion of a rural railway with narrow gauge, of which we mentioned the inauguration a few months ago. The speculation is succeeding very well, and great improvements have been realised in all the surrounding country since the system has been in operation.

THE additions to the Zoological Society's Gardens during the past week include a Silver-backed Fox (*Canis chama*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; a Tayra (*Galictis barbara*) from South America, presented by Mr. G. A. Muhlhauser; an Indian Chevrotain (*Tragulus meminna*) from Ceylon, presented by Mr. W. H. Ravenscroft; a Ruddy Ichneumon (*Herpestes smithi*) from India, presented by Mr. A. R. Lewis; two Slow-worms (*Anguis fragilis*), British, presented by Mr. O. Thomas; five Bosca's Mud Newts (*Pelomedusa boscai*) from North Spain, presented by Dr. A. Günther, F.Z.S.; an Indian Cobra (*Naia haje*) from India, presented by Mr. W. R. Higham; a Macaque Monkey (*Macacus cynomolgus*) from India, a Goffin's Cockatoo (*Cacatua goffini*) from Queensland, deposited; four Upland Geese (*Bernicla magellanica*) from Patagonia, purchased; an Axis Deer (*Cervus axis*), a Zebu (*Bos indicus*), born in the Gardens.